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09/585,472

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Michiaki Sakamoto

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07/28/2005

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EXAMINER

RUDE, TIMOTHY L

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/585,472

Applicant(s)

SAKAMOTO, MICHIAKI

Examiner

Timothy L. Rude

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-12,15-18 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) 2,6-12,15-18 and 21-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4 and 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10 May 2005 has been entered.

Claims

2. Claims 1 and 11 are amended. Claims 3, 13-14, and 19-20 are canceled. Claims 1-2, 4-12, 15-18, and 21-23 are pending. Claims 2, 6-12, 15-18, and 21-23 are withdrawn. Please note Applicant shall properly list withdrawn claims as "withdrawn" in all submittals. Any future submittal by Applicant without proper claim listing will be considered non-responsive. Claims 1, 4, and 5 are examined.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

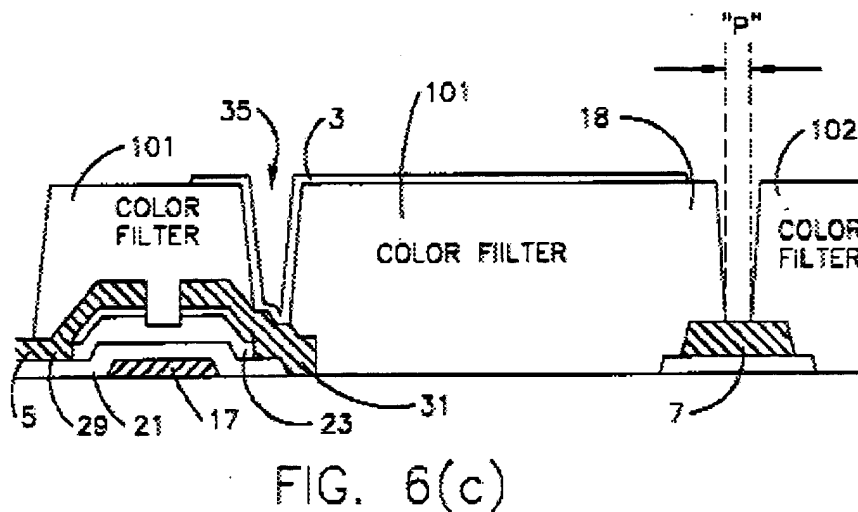
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhong et al (Zhong) USPAT 5,994,721 in view of Ohta et al (Ohta) USPAT 6,208,399 B1.

As to claim 1, Zhong discloses (entire patent, especially Figures 6(a)-6(c) and 11) an active matrix liquid crystal display device (col. 8, line 22 through col. 11, line 28), comprising: a first substrate, 19, and a second substrate, 51, at least one of said first substrate and said second substrate being transparent; a plurality of scanning lines, 7, formed on said first substrate; a plurality of signal lines, 5, formed on said first substrate crossing said scanning lines in a matrix manner a plurality of thin film transistors, each said thin film transistor respectively formed at an intersection of said scanning lines and said signal lines, each said thin film transistor comprising: a gate electrode, 17, formed on said first substrate; a gate insulation layer, 21, formed on said gate electrode; a semiconductor layer, 23, formed on said gate insulation layer; a drain electrode, 29, formed on a first portion of said semiconductor layer and a first portion of said gate insulation layer; and a source electrode, 31, formed on a second portion of said

Art Unit: 2883

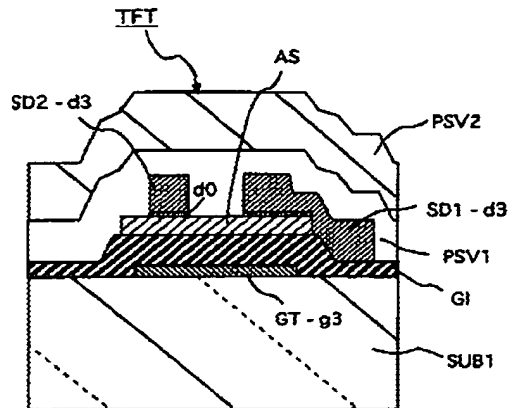
semiconductor layer and a second portion of said gate insulation layer; at least one color filter, 101, formed on said first substrate; a plurality of pixel electrodes, 3, each respectively connected to one of said thin film transistors through a contact hole, 35, and each respectively formed on one of said at least one color filter; a counter electrode, 49, formed on said second substrate; and a liquid crystal layer, 45, between said first substrate and said second substrate, said liquid crystal layer being driven by electric fields between said pixel electrodes and said counter electrode to thereby make a display, wherein said color filter is formed directly on said first substrate (per Figure 6(c)) in most of a light transmission region within a pixel area surrounded by said scanning lines and said signal lines, providing an efficient high aperture display [Abstract, Applicant's a thickness of said color film forming said color filter being a preselected first thickness that provides a sufficient chromaticity for said color filter; please note that the display of Zhong has a preselected first thickness that does provide the color display of Zhong with efficient high aperture display performance, per Zhong], and said color film comprises a stack of layers [stacked on top of transistor layers] that reduces a thickness of material of said color filter near said contact hole such that said second thickness is processed successfully to form a functional contact hole [Applicant's thickness chosen to permit a photo-crosslinkage to occur in an entire thickness of said second thickness of said color filter material during an exposure processing of said contact hole] (per Figure 6(c)).



Zhong does not explicitly disclose a display comprising a passivation film formed on said thin film transistors; at least one color filter additionally covering said passivation film; wherein said passivation film and said color film form a stack of layers that reduces a thickness of material of said color filter near said contact hole such that a portion of said passivation film remains in place adjacent to said contact hole.

Ohta teaches the use of a passivation film exclusively over and in direct physical contact with the TFT portions to protect a back channel portion of the TFT and thereby stabilize a threshold voltage, V_{th} (col. 8, lines 34-67) without warping of the substrate caused by the stress of said passivation layer. Please note that modification of the device of Zhong with the passivation film of Ohta would result in said passivation film and said color film form a stack of layers that reduces a thickness of material of said color filter near said contact hole such that a portion of said passivation film remains in place adjacent to said contact hole.

FIG. 3



Ohta is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a passivation film exclusively over and in direct physical contact with the TFT portions wherein said passivation film and a color film form a stack of layers that reduces a thickness of material of the color filter near said contact hole such that a portion of said passivation film remains in place adjacent to said contact hole to protect a back channel portion of the TFT and thereby stabilize a threshold voltage, V_{th} , without warping of the substrate caused by the stress of said passivation layer.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Zhong with the passivation film exclusively over and in direct physical contact with the TFT portions of Ohta wherein said passivation film and a color film form a stack of layers that reduces a thickness of material of the color filter near said contact hole such that a portion of said

Art Unit: 2883

passivation film remains in place adjacent to said contact hole to protect a back channel portion of the TFT and thereby stabilize a threshold voltage, V_{th} , without warping of the substrate caused by the stress of said passivation layer.

Please note Applicant's newly added recitations as to method steps (in device claim 1) of removing an insulating layer and a passivation film from within the pixel area are considered met by the structure above which has no insulating layer and not passivation film within the pixel area.

Please also note Applicant's newly added recitations as to the color filter around said contact hole is thinner than the color filter in said light transmission region by leaving said gate insulating layer and said passivation film around said contact hole are also considered met by the structure above. The color filter of the base reference, Zhong, is thinner around said contact hole than is the color filter in said light transmission region; adding the passivation filter of Ohta would certainly not make the color filter of Zhong around said contact hole any thicker (would obviously make it thinner, not thicker), so the color filter around said contact hole would necessarily remain thinner than the color filter in said light transmission region.

Lastly, please note Applicant's newly added recitations as to method step (in device claim 1) of leaving said gate insulating layer and said passivation film around said contact hole are considered met by the structure above which has a gate insulating layer and a passivation film around said contact hole.

Art Unit: 2883

As to claims 4 and 5, Zhong in view of Ohta teach the display of claim 1 above.

Zhong in view of Ohta does not teach a color pigment or dye wherein a difference in level generated on a surface of the organic film being not more than 0.3 μm

Zhong teaches the use of a color filter, 101, consisting of a photosensitive organic film (resist) with a color pigment or dye (col. 16, lines 43-46) that is substantially flat on the top surface (as illustrated in Figure 6c), therefore a difference in level generated on a surface of the organic film being not more than 0.3 μm as a results effective variable for reducing line-pixel capacitances (Abstract) (MPEP 2144.05 II B).

Zhong is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a difference in level generated on a surface of the organic film being not more than 0.3 μm as a results effective variable for reducing line-pixel capacitances which requires only routine experimentation.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Zhong in view of Ohta by adjusting the difference in level generated on a surface of the organic film per Ohta to be not more than 0.3 μm as a results effective variable for reducing line-pixel capacitances.

Response to Arguments

Applicant's arguments filed on 10 May 2005 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are as follows:

- (1) Applied prior art does not recognize Applicant's sufficiently thick and sufficiently thin purpose of the claimed invention (two conflicting requirements).
- (2) It is noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.
- (3) Examiner ignores Applicant's claimed "sufficiently thin and sufficiently thin" limitations.
- (4) Dependent claims are allowable because they directly or indirectly depend from an allowable base claim.

Examiner's responses to Applicant's ONLY arguments are as follows:

- (1) It is respectfully pointed out that Applied prior art does not need to recognize Applicant's sufficiently thick and sufficiently thin purpose of the claimed invention. The claimed structure results from the combination of applied prior art per rejections above.
- (2) It is respectfully pointed out that it is unclear what equivalents of what claims are being cited. Examiner considers this statement made by Applicant to be inconclusive.

(3) It is respectfully pointed out that the rejections above do address sufficiently thick to result in good display performance of Zhong and sufficiently thin to obviously result in the photolithographically produced contact holes of Zhong. The display of Zhong has satisfactory color display performance [Applicant's sufficiently thick] and Zhong can photolithographically produce the contact holes in his display [Applicant's sufficiently thin].

(4) It is respectfully pointed out that in so far as Applicant has not argued rejection(s) of the limitations of dependent claim(s), Applicant has acquiesced said rejection(s).

Examiner remains open minded about the possibility of allowable subject matter in the specification, but the present claims are considered properly rejected above.

Examiner will favorably respond to a formal personal interview request.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L. Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

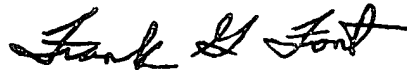
Art Unit: 2883

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



tlr

Timothy L Rude
Examiner
Art Unit 2883



Frank G. Font
Supervisory Patent Examiner
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